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ABSTRACT

Learning activities in environmental education require the use of the physical environment or moving into nature and natural settings to explore issues of the environment. These approaches are sometimes labeled as "nonformal." This informational bulletin examines a taxonomy of four learning environments and explore the application of nonformal learning theory into practice in the arena of environmental education. The bulletin is presented in four sections. The first section establishes definitions for four learning environments: formal learning, nonformal learning, informal learning, and self-directed learning. The second section examines the roles of formal, nonformal, informal and self-directed learning related to environmental education. The third section discusses methods of improving nonformal education in environmental education by stressing the principle that learning is an individual process of meaning-making. The summary reemphasizes that learning outcomes can improve if nonformal learning is an opportunity for the learner to be active, volitional, internally mediated, and in the process of constructing meaning. (MDH)

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The Environmental Outlook

Nonformal Environmental Education: Toward a Working Definition

by: Joe E. Heimlich

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Introduction

In teaching about the environment, learning activities are often constructed that require the use of the physical environment surrounding the learners, or moving into nature and natural settings to explore issues of the environment. In methodological discussions, these teaching approaches are sometimes labeled "nonformal." The same label of nonformal is given to many environmental education efforts that have little to do with formal schooling. This bulletin will explore the concepts of nonformal education and apply a definition of nonformal education to environmental education programs.

Learning is a human activity that occurs without prompting (Bloom, 1976). Natural learning is active, volitional, internally mediated, and, ultimately, an individual process of constructing meaning from information and experience as it is filtered through each individual learner's unique perceptions, thoughts and feelings (McCombs et al., 1991). Learning does not ensure, however, that the learners obtain the information or skills that society, employers, teachers, or educators desire (Archambault, 1964). Therefore, learning opportunities are constructed to create a framework for the transfer of knowledge that is more commonly viewed as "education."

Given that most environmental education efforts occur in settings that are less traditional than the formal classroom, it is useful to consider how the setting itself can be used to ground program and teaching efforts in nonformal theory. The "environment" is one of the elements of a teaching/learning exchange. Environment refers to both the physical, or constructed surroundings and to the affective environment created by the interaction of the educator, the individual learner, the group of learners, the content, and the physical environment (Heimlich and Norland, 1993).

A taxonomy for understanding learning opportunities can be created by looking at the settings in which information is transferred. We can then examine the unique traits of each of the learning settings that can enhance the learning potential in the teaching/learning exchange. One taxonomy widely used is the concept of formal, nonformal, and informal educational settings. This bulletin will construct a common definition for these terms by which we can then begin exploring the application of theory into practice in the arena of environmental education, specifically, the setting of nonformal education. In creating a common definition, an attempt will be made to understand how education can utilize the natural, human state of learning.

Definitions of Learning Settings

Various authors have offered definitions of formal, nonformal, informal and self-directed learning. Most of these definitions revolve around the issue of who holds control over the inputs and outcomes of the learning exchange. Mocker and Spear (1982) constructed a tool for understanding the relationship of control of learning objectives and the means of learning by creating a two-by-two matrix. This matrix identifies the "objectives of the learning" as controlled by either the institution or the learner on one dimension, and the control of the "means of learning" by either the institution or the learner on the other dimension. They called this the *Lifelong Learning Model.*

Using Mocker and Spear's construct, the following four definitions are achieved:

1. **Formal Learning**: the institution controls both the objectives and the means of learning;
2. **Nonformal Learning**: the learners control the objectives but not the means;
3. **Informal Learning**: the learners control the means but not the objectives; and

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4. **Self-Directed Learning**: the learners control both the objectives and the means.

The construct of who controls objectives and who controls the means of meeting these objectives forces a distinction between learning setting and methodology. The actual teaching/learning exchange activities, methods, techniques, and strategies of instruction are not what define the learning setting. "Nonformal" is a label sometimes given to any method that is considered nontraditional. A school class moving to the outdoors for a session is still operating in a formal setting because the goals and the means of instruction are controlled by the institution. An adult learner who chooses to attend a seminar on habitat in a nature preserve is controlling the learning objectives by choosing to attend while holding previously established expectations for determining the success of the program. This type of educational exchange is therefore nonformal. The seminar may, however, have very formal objectives that are different from those of the learner.

What is being taught, or "content," does not determine whether the intent of the instruction is formal or nonformal. Seaman and Fellenz (1990) suggest that content may dictate by tradition the order of presentation, competencies required of the teacher, specific evaluation efforts, practice, equipment, facility arrangements, time required and other tangible outcomes. Content may also dictate the teaching strategy to be used, explaining in part how nontraditional methods often used in environmental education sections of formal schooling can be confused with nonformal education itself.

Cranton (1989) defines education as any organized, sustained activity for the purpose of changing knowledge, skills, or values. Reed (in Reed and Loughran, 1984) uses a very similar definition for nonformal education: any organized, intentional, and explicit effort to promote learning to enhance the quality of life through non-school settings. In comparing nonformal and formal schooling, Reed lists these characteristics of nonformal education that can be related to the taxonomy used above:

- learner centered
- community-oriented content
- non-hierarchical relationship of facilitator and learner
- use of local resources
- present time focus
- age inclusive for learners.

Some authors (such as Akinpelu, 1977; Faure et al, 1972) create a distinction between the concepts of education and learning as they relate to formal, nonformal and informal instruction. Nonformal education refers to the institutional position and therefore relates in part to methodology. Nonformal learning, however, is viewed from the position of the learner and therefore focuses on the individual and the relationship of the learner to means and objectives. The definition of formal versus nonformal emerging from the intent of the setting rather than the method is reflected in the discussion from Roth and Lockwood (1979) on using the community as a tool for teaching environmental issues with activities appropriate for both formal and nonformal groups.

The setting, though, is not synonymous with the intent. Some educators provide an alternative setting to the traditional classroom hoping that the physical environment will transform the teacher's intent (Musgrave, 1975). For this document, education and learning are used as parallel terms, but the definitions of formal, nonformal, and informal are, by design, constructed from the perspective of the learner.

Nonformal Learning and Environmental Education

Environmental education relies heavily upon nonformal education as a major component of the "environmental message" being transferred to the public. Guillerie and Schoenfeld (1979), however, suggest that environmental education is most closely aligned with formal programs aimed at producing a citizenry knowledgeable about the environment, its associated problems, how to help solve these problems, and motivated to work toward solutions. They go on to cast the relatively informal information flow of environmental information in the social system as a component of environmental communication. Putting aside this separation of education by audience and media, how is nonformal learning used in environmental education? To address this question, we can briefly examine the roles of formal, nonformal, informal and self-directed learning related to environmental education.

Formal Learning Settings

Formal learning settings are those in which the goals of learning and the means of learning are

controlled by the institution. In formal settings, environmental education is often just that—teaching about the environment. McInnis (1975) posits that such imposed structure and delineation of content shuts out the greatest teaching, that of personal experience. Why then, is environmental education thrust upon the formal education system, sometimes through mandates in schools and in teacher education (Champeau, Monroe, and Engleson, 1988)? The formal education system is sometimes considered a conveniently accessible, strategically valuable subset of the public, even though that specific audience is generally somewhat removed from participating in the decision-making process (Disinger and Floyd, 1990). Furthermore, there is no guarantee that the outcome desired in imposing environmental education onto youth is of any value in meeting the goals of environmental education—an informed and politically active citizenry (Tanner in Sacks and Davis, 1979).

A report to the people of the state of New York from The Research Program in Environment and Society (Milbrath et al., 1990) suggests that students are fairly aware of and concerned about environmental problems but have weak substantive knowledge about how environments work, how societal and personal actions impact upon the environment, and how these environmental problems in turn impact upon society. This report examines environmental education in the formal setting and suggests that the experiences used to teach environmental concern be broadened to be multidisciplinary, involve basic concepts and principles of mathematics and science, be problem oriented, address local and global issues, and involve hands-on contact with nature. It is not the formal setting or the information that is shared within the setting that seems inadequate, but it is the limitation of environmental education within a discipline-based approach within this formal structure that appears to prohibit the attainment of the outcomes of informed and politically active citizenry.

Formal settings in which environmental education occurs are not limited to pedagogical education, but include certification and degree programs, licensure, as well as training within industry and organizations. Because much of environmental education, and education about the environment, occurs "outside" or "outdoors," the methods used are often confused with the philosophical base of the instruction. The methods used may be nonformal, or nontraditional. The questions of *who* controls the learning objectives and *what* are the means of learning remain within the definition of formal as described by Mocker and Spear in most of these situations. Training, licensure, certification and degree or diploma programs all have specified levels of performance or outcome measures which indicate that the control over the learning objectives resides within the institution. Furthermore, these programs usually reflect what the institution views as appropriate structure, thus strengthening its control over the means.

Much of the movement of environmental education is in the formal settings. But more of what occurs to educate people about the environment and their relationships to the environment happens in nonformal and informal settings.

Nonformal Learning

Nonformal learning is that in which the individual controls the objectives of learning but not the means. Where does nonformal learning occur in environmental education? Schafer (1981) suggests that the real friends of environmental education are not the formal education agencies, but rather the environment-related management and protection agencies. Organizations that respond to constituent needs and provide the services or programs are often operating as nonformal educators. The constituent or client needs are translated as the objectives of a program, campaign, movement, or training.

In responding to client needs, an organization maintains control over the educational program through the means of structuring the program, determining how the information will be shared, presented, or provided to the learners, and operating within the constraints of the organization and its own sets of beliefs, values, and attitudes. Many participants in nonformal educational programs do not realize that agency or organizational policies actually determine the parameters of programs (Teich, in Sacks and Davis, 1979).

Some nonformal educational programs may look similar to formal education, and in some situations appear to be more formal in structure than the learning that is labeled as formal. Workshops and seminars are two of the methods of instruction that are usually assumed to be nonformal. Clubs, service groups, and various organizations are perhaps a more significant provider of nonformal education

on a continual basis. The "program committee" responds to members' needs and desires (theoretically) and identifies programs for the full membership at meetings or special programs. The objectives come from the membership, but the means of education is controlled by the larger organization.

Nonformal education by definition is excluded from schools, though nonformal methods of instruction are encouraged. Youth groups such as scouts, 4-H, campfire, and FFA have environmental concerns, environmental content, and consumer behavior, all of which are part of environmental education, in various modes. The learner controls the reasons for participating, and even in situations such as merit badges, controls the options for completion, maintains the choice to complete or quit, and ultimately determines what to receive from completing the required program. Because choice is part of the participation aspect and there is no specified level of performance for an "outcome," membership in these types of groups is nonformal.

Informal Learning

Informal learning has often been called "incidental learning" in that opportunities for learning are structured by educators, but the choice of participation is entirely on the part of the individual. Incidental learning and informal learning in pedagogical settings often include teachers responding to immediate events and thereby creating opportunities for learning that are not part of the formal learning plan. In environmental education, interpretation activities are a major component of informal education efforts. In informal learning, the educator or interpreter defines what will be available, disseminated, or aired for the learner, which correlates to the objectives for the program. The learner, then, controls the means of learning through choosing to listen, choosing to read, choosing to participate in the nature walk, or reading the signs on the self-guided tour. Informal education is perhaps the least studied of educational structures because it is challenging to ascribe learning outcomes to a specific teaching incident.

To illustrate this difficulty, we can look at the case of a learner on a bird watching expedition. Prior to participating in this particular birding experience, we may or may not know if the learner already holds some, none, or a great amount of prior knowledge about birds, bird habitats, or bird calls. Further, how much of this prior knowledge did the learner control in a manner that allowed for transferability from parallel information? Knowledge of the habitat of one ground nesting bird, for example, relates to the habitat of another ground nesting bird that the individual had not known before as ground nesting.

Informal learning occurs continually. Not all informal or incidental learning is considered by those in the educational field as "valid" or "appropriate" learning as misinformation is learned in the same manner that good information is learned.

Self-directed Learning

Self-directed learning occurs when individuals control both the outcomes and the means for learning. An individual purchasing instructional books and then undertaking self-study is applying self-directedness to the learning. One of the difficulties in discussing self-directed learning is that there is potentially great overlap between self-directed learning and other types of learning settings. Is it self-directed learning that occurs on a nature trail, or is it informal learning in that the trail was designed, developed and interpreted by an educator prior to the individual's choice to use the trail?

The semantic differences between informal and self-directed learning are of valuable philosophic concern, but are not the focus of this discussion though self-directed learning is an important component in the total environmental education effort.

Improving Nonformal Education in Environmental Education

Nonformal education is an important component of environmental education. Environmental groups and clubs, with their growing memberships, act as major nonformal educational groups. Numbers of students entering degree programs in environmental education and interpretation are increasing. Environmental education as a field needs to explore how grounding activities in the theory of nonformal education can improve the information exchange. It is obvious that research is necessary.

If we accept Bloom's (1976) assumption that learning is a natural activity, then one goal of nonformal learning is to enhance the human nature of inquiry. Formal education identifies from the institution's or the teacher's perspective what the learner needs to know; nonformal education suggests that the educator structure learning based on

what the learner wants or identifies as a need to know (Mocker and Spear, 1982). That this is not possible or probable through most formal education settings is suggested by Henry when he argues that the purpose of formal education has never been to free the human spirit and mind, but to bind them (Lindenfeld, 1973). Schrank (1972) places formal education within the confines of a culture and defines the purpose of schooling as adapting human potential to the dominant culture, not developing human potential.

The definition of learning in any setting is constantly evolving. Nonformal learning provides an opportunity to break from the focus of the formal learning setting. The success of a nonformal environmental program resides with the true responsiveness of the program to the needs and wants of the learners, not the perceived wants and needs of the learners by the institution or by the individual educator.

McCombs et al. (1991) provide a definition of natural learning that can be applied to the creation of grounded nonformal education efforts. Natural learning is active, volitional, internally mediated and an individual process of meaning-making. How does this definition relate to nonformal learning in environmental education?

First, natural learning is *active*. This does not mean that all learning must be physically challenging or kinesthetically based, but that learning must come from within the learner. A teacher cannot "learn" a student—learners choose to learn (Purkey and Novak, 1984). In environmental education, many of the learning opportunities and settings have inherent interest for learners. The challenge is to utilize the inherent interest and allow the interest to drive the educational exchange, rather than to impose upon this interest and create an educational program that moves from the interest and direction of the learner to the interests and expertise of the educator. Smith (1966) provides support for educators' efforts by suggesting that teaching is a creative process and creativity is tapping into personal past experiences and allowing learners to put these selected experiences together into new patterns, new ideas, or new products. The experiences of the educator can be the basis for creating active learning for the participant.

Second, natural learning is *volitional*. Although every individual shares traits with every other person, each person is a unique being, differing from all other humans in a multitude of ways. It is impossible to separate the individual learner from the life of the individual. All elements in one's life are experiences of the whole person (Richards, 1980). Nonformal education should provide a forum for the merging of the learner and the learner's life outside the learning setting. In structuring nonformal learning, the objectives belong to the learner and come from the learner, but the learning itself is structured by the educator or the institution. The structure of the education exchange can be designed to either include or exclude the experiences of the learner beyond the immediate setting. Grounding environmental education in the theory of nonformal learning suggests that the exchange should, by design, include prior experiences, beliefs, considerations, and aspirations of the individual learner.

The third component of natural learning is that it is *internally mediated* and the fourth is that natural learning is ultimately an *individual process of meaning-making*. Just as there can be no learning without a learner, there can be no meaning without a meaning maker (Postman and Weingartner, 1969). Meaning comes from within an individual, but it is the teacher who constructs a framework for learning from which meaning can be drawn (Carlsen, 1988). Piaget distinguishes between accommodation, or the application of a learner's general psychological structure to a particular situation, and assimilation, or the taking in of environmental data as a function of the learner's internal structure to assign meaning (Furth, 1970).

In nonformal learning, the individual comes to the learning prepared to apply meaning to the information and experiences provided. Rogers (1983) argues that anything that can be taught to another person is relatively inconsequential and has little if any significant influence on behavior. In a learner's belief system, the only learning that truly influences behavior is self-discovered, self-appropriated learning.

The challenge in grounding teaching in the theory of nonformal education is to avoid coloring experiences and information with what has meaning for the educator, but to allow individuals to process and apply their own meanings to the information or activities. Instructional strategies such as removing "right and wrong" from the teaching vocabulary and reducing threats to the learner are vital to nonformal

education processing. That learning is not a contest between the individual learner and something outside such as other learners or the educator, but is internal (Postman and Weingartner, 1969) is emphasized in nonformal education.

The physical environment has the potential to affect teaching and learning both in activity and in psychological impact on the learner. This impact comes from individual perceptions of the physical environment, not the actual physical realities (Heimlich and Norland, 1993). An individual who nearly drowned as a child may be uncomfortable around a body of water; the discomfort comes from the perception of the individual, not the reality of the water.

As learning opportunities are constructed in nonformal programs, it is valuable to consider that not all learners' perceptions will match those of the program administrators or instructors. Creating learning settings that allow for diverse interpretations of the physical environment can enhance learning outcomes (Musgrave, 1975). Going further, allowing individuals to apply their affective interpretations to the setting before beginning a program can increase learner willingness to participate. Long (1983) believes that the purpose of the physical environment is to assist in the creation of a positive affective environment. The way in which the educator chooses to construct the learning environment matters.

In environmental education, it is often assumed that because we have moved into the "real environment," little construction for learning is necessary. Yet, the human needs of comfort, safety, security, warmth, belongingness and the like exist in learning settings, whether they are in a classroom, a boardroom, or the mountains. How much learning can any individual do if what is of utmost concern to the individual is where the restroom is and how long before the group will reach it? It is important in constructing nonformal educational experiences that consideration be given to the imposition of the human into the learning setting, especially in the outdoors. Increasingly, such considerations are given to land labs where "learning stations" for the study of traditional disciplines become components of the design, rather than afterthought.

Whether the nonformal environmental program is an after-school club, a special interest group, or a tour group at a nature center, nonformal learning can be improved by allowing the physical setting to be the "starting point" for the learning rather than the "ending point." How often do we lecture about what people will see and then go on the tour? It may be more appropriate to go on the tour and allow the setting to drive the learning as the participants begin to apply their own meaning to the information. Holt (Merrill and Gregory, 1974) laments that much of the time spent on learning is devoted to giving learners answers, rather than exploring how the questions arose. In nonformal education, the questions can become the learning rather than the answers.

Summary

Nonformal education is often used as interchangeable with "environmental education" because the latter is often conducted in nontraditional settings or manners. In using the terms interchangeably, disservice is done to environmental education in both formal and nonformal settings.

Nonformal education refers to education that is driven by the objectives of the learner who is often participating by choice. The learning occurs through an activity organized by an institution or body that constructs the learning opportunities. In environmental education, much of the education that occurs is nonformal in youth groups, social and service clubs, tours, nature sites and centers, and similar types of programs.

The methods of instruction reflect who controls the means of receiving the information and the construction of the objectives for instruction. Formal and nonformal educators alike need to be cognizant of the array of methods available, especially those inherently linked to nontraditional settings for instruction. It is beneficial to all educators to broaden individual repertoires of methods to utilize instructional methods other than presentation methods in both formal and nonformal settings.

In examining the basic principles of nonformal education, it becomes clear that a great proportion of the environmental education that occurs in our culture is in the nonformal and informal modes. By revisiting the basic principles of nonformal education, where the learners control the objectives but not the means of the learning exchange, it is possible to examine ways in which nonformal education efforts can be grounded in these principles. The educator has the responsibility of considering the

outcome, the methods, the setting, and the learner in constructing the learning opportunities. In nonformal education, construction of the learning is the primary role of the educator; learners bring with them their own objectives and thus a strong willingness to learn. It is often when the educators believe they know what needs to be taught that we reduce the effectiveness of nonformal learning.

Nonformal learning provides an opportunity for education to rely on the natural process of learning. By considering how to allow learning to be active, volitional, internally mediated, and an individual process of constructing meaning; nonformal education can become solidly grounded in theory that may improve the learning outcomes for the participants.

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